

forming a plasma from the etchant gas within the reaction chamber;
etching the feature in at least a portion of the low-k dielectric layer with the active etchant;
sputtering some of the hardmask with the active etchant; and
forming a volatile compound from sputtered hardmask and fluorine, thus reducing micromasking.

(20. (New) The method, as recited in claim 19, wherein the active etchant is selected from the group consisting of hydrogen and ammonia.

21. (New) The method, as recited in claim 20, wherein the fluorocarbon is selected from the group consisting of CH_3F , CH_2F_2 , and CHF_3 .

B, vent 22. (New) The method, as recited in claim 21, wherein the active etchant is ammonia with a flow of about 100 sccm to about 3000 sccm and the fluorocarbon is CH_3F with a flow of about 1 sccm to about 10 sccm.

23. (New) The method, as recited in claim 21, wherein the low-k dielectric layer is a silicon-free low-k dielectric layer.

24. (New) The method, as recited in claim 21, wherein the low-k dielectric layer is a silicon-free benzocyclobutene low-k dielectric layer.

25. (New) The method, as recited in claim 21, wherein the active etchant is nitrogen and hydrogen.

26. (New) The method, as recited in claim 25, wherein the flow rate of the nitrogen is between about 50 sccm to about 1250 sccm and the flow rate of the hydrogen is about 25 sccm to about 500 sccm.

27. (New) The method, as recited in claim 26, wherein the fluorocarbon is CH_3F with a flow rate of about 2 sccm to about 10 sccm.

28. (New) The method, as recited in claim 25, wherein the fluorocarbon is CH_3F .

29. (New) The method, as recited in claim 21, further comprising depositing polymer from the fluorocarbon on the hardmask to reduce hardmask sputtering.

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30. (New) The method, as recited in claim 29, further comprising depositing polymer from the fluorocarbon on sidewalls of the feature to reduce profile bowing.

31. (New) The method, as recited in claim 19, wherein the fluorocarbon is selected from the group consisting of CH_3F , CH_2F_2 , and CHF_3 .

32. (New) The method, as recited in claim 19, wherein the low-k dielectric layer is a silicon-free low-k dielectric layer.

33. (New) The method, as recited in claim 19, wherein the low-k dielectric layer is a silicon-free benzocyclobutene low-k dielectric layer.